

NAZARCHUK, Galina Kirillovna; VSEKHSVIATSKIY, S.K., doktor fiziko-matem.
nauk, otv.red.; STAROSTENKO, T.M., red.; MATVIYCHUK, A.A.,
tekhn.red.

[Solar eclipse of 1961 in the Ukraine] Solnechnoe zatmenie na
Ukraine v 1961 godu. Kiev, 1961. 46 p. (Obshchestvo po raspro-
straneniю politicheskikh i nauchnykh znaniï Ukrainskoi SSR.
Ser.6, no.1). (MIRA 14:1)

(Eclipses, Solar--1961)

40011
S/035/62/000/008/046/090
A001/A101

3.2430

AUTHOR: Nazarchuk, G. K.

TITLE: On repulsive force in type I tails of comets

PERIODICAL: Referativnyi zhurnal, Astronomiya i Geodeziya, no. 8, 1962, 83,
abstract 8A575 ("Visnyk Kyivs'k. un-tu", 1960 (1961), no. 3, ser.
astron., fiz. ta khimii, no. 2, 124 - 143, Ukrainian; Russian sum-
mary)

TEXT: Relative accelerations $1 + \mu$ acting on cloudy formations in tails
of the first Bredikhin type of the comets 1892 I, 1899 I, 1903 IV, 1908 III and
1910 II were determined by A. Ya. Orlov's method (41 determinations in all).
Numerical values of $1 + \mu$ are most frequently within the range from a few dozens
to a few hundreds, attaining the value of $\sim 10^3$ in individual cases only. Ac-
celerations are discussed from the viewpoint of Biermann's theory, and the con-
clusion has been drawn that the intensity of the corpuscular background radiated
by the Sun is equal to $3.5 \times 10^{10} \text{ cm}^{-2} \text{ sec}^{-1}$ at a distance of 1 astronomical
unit. The suspicion by S. V. Orlov that accelerations are multiples of number
22.3 has not been confirmed. There are 45 references. O. D.
[Abstracter's note: Complete translation]
Card 1/1

BARBARUK, G.V., dotsent (Kiyov, ul.25 let Oktyabrya, d.16, kv.34); Prinimali
uchastie: SUKHONOSOVA, V.V., student; HAZANCHUK, L.V., student

Use of the fascia lata of the hip for sutures and ligatures. Nov.
khir. arkh. no.9:66-69 S '61. (MIRA 14:10)

1. Kafedra operativnoy khirurgii i topografiyaskoy anatomii (zav.-
doktor med.nauk prof. I.P.Kallistov) Kiyevskogo meditsinskogo
instituta.

(FASCIAE (ANATOMY)) (SUTURES) (LIGATURE (SURGERY))

NAZARCHUK, M. K.

Experimental Aerodynamics

Dissertation: "Processes in Convergent Gate Apparatus of Gas Turbines at Subcritical Rates of Flow." Cand Tech Sci. Inst of Thermal Power Engineering, Acad Sci Ukr SSR, Kiev, 1953.
(Referativnyy Zhurnal — Mekhanika, Moscow, Mar 54)

SO: SUM 213, 20 Sep 1954

124-1957-2-1792

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 2, p 49 (USSR)

AUTHOR: Nazarchuk, M.M.

TITLE: An Analytical Method for Calculating a Gas-turbine Stage for a Variable Regimen at Sub-critical Flow Velocities (Analiticheskiy metod rascheta stupeni gazovoy turbiny na peremennyy rezhim pri dokriticheskikh skorostyakh potoka)

PERIODICAL: Sb. tr. In-ta teploenerg. AN UkSSR, 1955, Nr 12, pp 59-68

ABSTRACT. An approximate analytical method is explained for the thermal calculation of a stage of a gas turbine from the given dimensions of the wetted portion of the stage at subcritical flow velocities. In the plotting of the turbine characteristics for variable operational regimens, the basic difficulty consists in the correct selection of the losses; the Author does not study this problem, but mentions that the coefficient of velocity Ψ should be taken with due consideration to the impact losses.

V.Kh. Abiants

1. Gas turbines--Mathematical analysis

Card 1/1

NAZARCHUK, M.M., kandidat tekhnicheskikh nauk.

Calculating the isentropic process in the change of state of a gas
with varying heat capacity. Trudy Inst.tepl. USSR no.12:69-77 '55.
(Gases) (Entropy) (MIRA 9:7)

HAZARCHUK, M.M.

Thermodynamic calculation of turbine nozzles subject to outflow losses. Dep. UN USSR no.4:362-364 '56. (MIRA 9:12)

1. Institut teploenergetiki Akademii nauk USSR. Predstavleno akademikom Akademii nauk USSR I.T. Shvetsem.
(Turbines)

SOV/124-58-1-466

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 1, p 56 (USSR)

AUTHOR: Nazarchuk, M. M.

TITLE: On Some Peculiar Problems in the Thermal Design Calculation of Steam and Gas Turbines (O nekotorykh osobennostyakh teplovogo rascheta parovykh i gazovykh turbin)

PERIODICAL: Sb. tr. In-t teploenerg. AN UkrSSR, 1956, Nr 13, pp 104-109

ABSTRACT: It is shown that at near-critical values of the pressure drop in turbine nozzles and blade cascades and a constant flow rate even seemingly insignificant variations in passage cross sections exert a strong influence on the pressure drop that can be achieved in the cascade. This peculiar problem in turbine design does not constitute anything new, since it is well known from gasdynamics that at transonic pressure ratios even a small change in nozzle area may result in a significant change in the achievable pressure ratio.

V. M. Akimov

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PHASE I BOOK EXPLOITATION

643

Nazarchuk, Mikhail Mikhaylovich

Nekotoryye voprosy teorii adiabatnykh techeniy gaza v kanalakh (Problems in the Theory of Adiabatic Flow of Gas in Channels) Kiyev, Izd-vo AN UkrSSR, 1957.
73 p. 1,000 copies printed.

Sponsoring Agency: Akademiya nauk Ukrainskoy SSR. Institut teploenergetiki.

Responsible Ed.: Romanenko, P. N., Doctor of Technical Sciences; Ed. of
Publishing House: Remennik, T. K.; Tech. Ed.: Zhukovskiy, A. D.

PURPOSE: This report is intended for engineers and scientific workers concerned with gas dynamics.

COVERAGE: The book describes the theory of equilibrium adiabatic gas flow in tubes, in converging nozzles, and in Laval nozzles. The friction effect is calculated by consideration of an overall loss coefficient and the local drag coefficient.

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Problems in the Theory of Adiabatic Flow of Gas in Channels

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Certain new relationships for equilibrium flows are cited. Based on boundary-layer theory, the conditions for the occurrence of "critical flow" in tubes are studied. It is shown that it is impossible to generalize the conclusions of the equilibrium theory so as to include the average magnitudes of nonequilibrium flows. Various approximate methods for computing a laminar gas flow in the entrance section of a plane-parallel channel are given. The book contains 15 figures and 2 tables. There are 23 references, 17 Soviet, 3 German, 2 English, 1 French. The author expresses his gratitude to Professor L.A. Vulis, Doctor of Technical Sciences; Professor P.N. Romanenko, Doctor of Technical Sciences; S.V. Romanenko, Candidate of Technical Sciences; O.A. Gerashchenko, Candidate of Technical Sciences; and N.I. Pol'skiy, Candidate of Physical-Mathematical Sciences.

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AVAILABLE: Library of Congress (QC 168.N3)

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IS/mas
9/29/58

NAZARCHUK, M.M.

On the method of solving the interior problem of boundary layer equations. Dop. AN URSR no.2:145-148 '57. (MLRA 10:5)

1. Institut teploenergetiki AN URSR. Predstaviv akademik AN URSR I.T. Shvets'.
(Hydrodynamics)

NAZARCHUK, M. M.

AUTHORS: Gerashchenko, O. A., Nazarchuk, M. M. 57-12-19/19

TITLE: On the Consideration of Moistening in Solving Hydrodynamic Problems
(Ob uchete smachivayemosti poverkhnosti pri reshenii zadach gidrodinamiki).

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1957, Vol. 27, Nr 12, pp. 2797-2798 (USSR)

ABSTRACT: Special experimental measurements of water flow in tubes wetted and covered with paraffine were conducted. The experimental error was less than $\pm 0.1\%$. The experiments, which were easily reproducible showed no noticeable influence of the wetting. The "adhesion" of liquids without adhesiveness at solid surfaces may be explained in the following way: If it is assumed, that sliding occurs at the interface, this sliding must follow the ordinary law of sliding friction: $F=fN$, F denoting the force of friction, f the friction coefficient and N the pressure normal to the surface. Here, in the case of the investigation of one single surface, this pressure is understood to be the quantity of the absolute hydrostatical pressure. The value of the friction coefficient between the liquid and a not wetted

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On the Consideration of Moistening in Solving Hydrodynamic Problems

57-12-19/19

body was never determined up to now. If in this case, however, friction is considered to be of the dry friction type, the order of magnitude of f may be evaluated starting from the known data for solids. It is to keep within the values 0.1 and 1.0. It can be shown, that on normal conditions, at atmospheric pressures and not too far above, ($p \gg 10^4 \text{ kg/m}^2$) a sliding can occur only at tangential hydrodynamic stresses above 100 - 1000 kg/m^2 . Stresses of such magnitude could be obtained for example in the case of water ($\mu = 10^{-4} \text{ kg}\cdot\text{sec/m}^2$ at 20°C) only with exceptionally great gradients of velocity at the walls of the order of magnitude of 10^6 - 10^7 l/sec , which, of course, is practically impossible. From this it appears, that the adhesion at the surfaces of bodies within the flow represents no physically unexplainable fact. By far the greater number of cases occurring in practice are still far away from the limit, at which a sliding of the liquid on the wall begins. An analogous procedure may be applied to the investigation of

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On the Consideration of Moisting in Solving Hydrodynamic Problems

57-12-19/19

the problem of the sliding of liquids with adhesiveness. In this case the normal pressure is understood to be the internal pressure of the liquid, with a magnitude exceeding 10^4 ata, and a transition of the limit of sliding may occur only at gradients of velocity at the wall surpassing the entirely incredible values of 10^{10} 1/sec.

ASSOCIATION: Institute teploenergetiki AN USSR Kiyev (Institute of Thermal Power AS Ukrainian SSR Kiyev)

SUBMITTED: June 3, 1957

AVAILABLE: Library of Congress

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NAZARCHUK, M. M.

p. 2

PHASE I BOOK EXPLOITATION

SOV/3898
SOV/31-M-14

Akademiya nauk UkrSSR. Institut teploenergetiki

Teploobmen i gidrodinamika (Heat Transfer and Hydrodynamics) Kiyev,
1958. 190 p. (Series: Its: Sbornik trudov, no. 14) 2,000
copies printed.

Eds. of Publishing House: Ya.L. Kaplan and N.M. Labinova; Tech.
Ed.: M.I. Yefimova; Editorial Board: I.T. Shvets (Resp. Ed.),
Academician, Academy of Sciences UkrSSR; G.M. Shchegolev (Deputy
Resp. Ed.), Candidate of Technical Sciences; N.M. Kondak (Resp.
Secretary), Candidate of Technical Sciences; V.I. Tolubinskiy,
Corresponding Member, Academy of Sciences UkrSSR; I.I. Chernobyl'-
skiy, Doctor of Technical Sciences; M.M. Nazarchuk, Candidate of
Technical Sciences; P.I. Lavrov, Candidate of Technical Sci-
ences; P.D. Shvetsov, Professor; and N.M. Pyatyshkin, Candidate of
Technical Sciences.

PURPOSE: This collection of articles is intended for scientific
workers and technical personnel in the fields of heat transfer
and hydrodynamics.

COVERAGE: This collection of 18 articles deals with experimental
and theoretical studies of problems in heat transfer and hydro-

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Heat Transfer and Hydrodynamics

SOV/3898

dynamics as they affect steam and gas turbines and heat-transfer devices. The results of theoretical investigations of heat transfer in turbine components and in elements of heat-utilizing apparatus are described, and new calculation methods are suggested. Several problems of the thermodynamics and aerodynamics of steam and gas turbines are discussed. References follow each article.

TABLE OF CONTENTS:

Shvets, I.T., O.A. Gerashchenko, and Ye.P. Dyban. Investigation of the Temperature Fields in the Hubs of Turbine Rotors by Means of the Thermal-Analogy Method 3

On the basis of a theoretical analysis of the system of equations describing the temperature field of a bladed rotor, the authors present a method for taking into account the thermal resistance of the blade stems. This method may be used for calculations of steady-state heat conditions as well as unsteady-state conditions.

Agranovich, V.M., O.A. Gerashchenko, and M.M. Nazarchuk. Approximate Method for Determining Temperature Fields and Stresses in a Drum-Type Turbine Rotor at Starting 20
Card 2/7

Heat Transfer and Hydrodynamics

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The authors present a simplified method for approximating the temperature fields and stresses in a drum-type turbine rotor. The method does not take axial variation of temperature into account but considers each section of the rotor as part of an infinitely long hollow cylinder with boundary conditions corresponding to those for the particular section under consideration. Results calculated by the approximate method are compared with those determined by more accurate calculations. An analysis of the discrepancies leads to the conclusion that the simplified method is sufficiently accurate for most engineering purposes. The following personalities are mentioned: V.I. Fedorov, V.M. Agranovich, and N.N. Shel'menko, all of the Heat-Engine Laboratory, Institut teploenergetiki AN UkrSSR (Institute of Heat-Power Engineering, Academy of Sciences UkrSSR).

Dorfman, A.Sh. Simple Calculation Method for a Laval Nozzle 26
The author presents the results of an experimental study of the process of heat transfer during the condensation of steam. A detailed description of the experimental apparatus and the methods employed is given, as well as a qualitative description of the physical phenomena involved in the process of condensation on the basis of the results obtained.

Card 3/4
3

AUTHOR: \ Nazarchuk, M.M. SOV/21-58-2-20/28

TITLE: On One Peculiarity of One-Dimensional Stationary Gas Flows
(Ob odnoy osobennosti odnomernykh statsionarnykh gazovykh
techeniy)

PERIODICAL: Dopovidi Akademii nauk Ukrain's'koi RSR, 1958, Nr 2,
pp 201-203 (USSR)

ABSTRACT: There are some peculiarities in one-dimensional stationary gas
flows which are common to the wide class of these flows. The
author considers the one-dimensional flow of ideal gas with
constant consumption and the presence of losses and heat ex-
change and derives a differential equation of the flow.
Analyzing this equation the author shows that there is a
characteristic quantity $M^2 = \frac{1}{K}$ for a wide class of one-
dimensional stationary gas flows. As particular cases, he
analyzes a case without consumption and an isothermal flow
with consumption. In the latter case the limiting tube
length is attained when $M^2 = \frac{1}{K}$.
There are 2 Soviet references.

ASSOCIATION: Institut teploenergetiki AN UkrSSR (Institute of Thermal
Power Engineering of the AS UkrSSR)

~~Secret~~

SOV-21-58-4-8/29

AUTHORS: Gerashchenko, O.A. and Nezarchuk, M.M.

TITLE: On the Value of Friction Space Before the Entrance Edge of a Flat Plate (O velichine oblasti ~~termozheniya~~ pered vkhodnoy kromkoy ploskoy plastiny)

PERIODICAL: Dopovidi Akademii nauk Ukrain's'koi RSR, 1958, Nr 4, pp 390-392 (USSR)

ABSTRACT: The authors consider the laminar flow of an incompressible viscous liquid before the entrance edge of a flat plate. They derive a formula which shows that the region of effect of viscous perturbations before the plate is rather limited. Taking water at 20°C flowing around a plate at a speed of 1 m/sec as an example, the space of viscosity effect is practically limited to 0.2 mm.

ASSOCIATION: Institut teploenergetiki AN UkrSSR (Institute of Thermal Power Engineering of the AS UkrSSR)

PRESENTED: By Member of the AS UkrSSR, I.T. Shvets

SUBMITTED: July 4, 1957

NOTE: Russian title and Russian names of individuals and institutions appearing in this article have been used in the transliteration.

1. Fluid flow--Theory 2. Fluid flow--Viscosity 3. Fluid flow
--Friction 4. Laminar boundary layer--Mathematical analysis

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NAZARCHUK, M.M. (Kiyev); POL'SKIY, N.I. [Pol's'kiy, N.I.] (Kiyev)

Establishing a Poiseuille flow. Prikl. mekh. 4 no.4:442-446
'58. (MIRA 11:12)

1. Institut teplenergetiki AN USSR.
(Viscosity)

AUTHORS: Dorfman, A.Sh. and Nazarchuk, M.M. 21-58-5-15/28

TITLE: On the Character of Variation of the Summary Friction Coefficient of Gas Flow in a Cylindrical Tube in the Neighborhood of Maximum Regime (O kharaktere izmeneniya summarnogo koeffitsiyenta poter' pri techenii gaza v tsilindricheskoy trube na rezhimakh, blizkikh k maksimal'nomu)

PERIODICAL: Dopovidi Akademii nauk Ukrain's'koi RSR, 1958, Nr 5, pp 528-530 (USSR)

ABSTRACT: Experimental studies by A.F. Gandel'sman, etc, [Ref 1] have established that the local friction coefficient of a gas flow sharply decreases near the output end of the tube when the regime approaches the maximum. In practical calculations, the summary resistance coefficient is often used instead of the local one. The authors, by way of analytical reasoning, show that the summary coefficient also decreases as the regime approaches the maximum, and its value cannot exceed $\frac{2}{k+1}$ at the maximum regime. (Remark: the meaning of the k-symbol was not explained in the article). There is 1 graph and 2 Soviet references.

ASSOCIATION: Institut teploenergetiki AN UkrSSR (Institute of Thermal Power Engineering of the AS UkrSSR)

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21-58-5-15/28

On the Character of Variation of the Summary Friction Coefficient of Gas Flow in a Cylindrical Tube in the Neighborhood of Maximum Regime

PRESENTED: By Member of the AS UkrSSR, I.T. Shvets

SUBMITTED: October 14, 1958

NOTE: Russian title and Russian names of individuals and institutions appearing in this article have been used in the transliteration.

1. Gas flow--Mathematical analysis

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21-58-7-9/27

AUTHORS: Babukha, G.I. and Nazarchuk, U.K.

TITLE: Method for Calculating Heat Exchange in a Two-Phase Vertical Flow with a Polydispersed System of the Solid Phase
(Metod rascheta teploobmena v dvukhfaznom vertikal'nom potoke pri polidispersnoy sisteme tverdogo fazy)

PERIODICAL: Dopovidi Akademii nauk Ukrain's'koi RSR, 1958, Nr 7, pp 724 - 727 (USSR)

ABSTRACT: All loose materials which are subjected to heating under practical conditions, either for drying or for ordinary heating, are polydispersed systems. The heating of these materials can be successfully carried out in drying tubes with high intensity. A peculiarity of the heating of a material with particles of different sizes is that the groups of particles differing in size are in different conditions of heat exchange with the gas and in different hydrodynamical conditions of motion. The article gives a method for calculating the process of heat exchange between the gas moving in one direction along a vertical tube and solid spherical particles of different sizes. The method makes it possible to take into account

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21-58-7-9/27

Method for Calculating Heat Exchange in a Two-Phase Vertical Flow with
a Polydispersed System of the Solid Phase

the changes in the Re and Nu numbers (for the particles)
and also the changes in the velocity and physical constants of the gas. There is 1 graph.

ASSOCIATION: Institut teploenergetiki AN UkrSSR (Institute of Thermal
Power Engineering of the AS UkrSSR)

PRESENTED: By Member of the AS UkrSSR, I.T. Shvets

SUBMITTED: January 10, 1958

NOTE: Russian title and Russian names of individuals and institutions appearing in this article have been used in the transliteration.

1. Heat transfer--Mathematical analysis 2. Heat exchangers--Performance

Card 2/2

BABUKHA, G.L.; NAZARCHUK, M.M.

Method for calculating the heating of a single fraction of suspended granular material. Inzh.-fiz.sbur.no.11:14-23 N '58.
(MIRA 12:1)

(Heat--Transmission) (Granular materials)

S/112/60/000/006/004/032

Translation from: Referativnyy zhurnal, Elektrotehnika, 1960, No. 6, p. 57,
2.4095

AUTHORS: Agranovich, V. M., Gerashchenko, O. A., Nazarchuk, M. M.

TITLE: An Approximate Method of Determining Temperature Fields and Stresses
in a Drum Turbine Rotor at Starting

PERIODICAL: Sb. tr. In-t teplo-energ. AN UkrSSR, 1958, No. 14, p. 20-25

TEXT: The rotor is considered as a combination of hollow conical and cylindrical solids of revolution. Assuming that the working medium temperature at starting is approximated for each point by an exponential time function and that the temperature change along the length of the rotor is linear, the authors carry out an approximate calculation of the rotor temperature field, neglecting the axial heat flow. The obtained result is substituting in S. P. Timoshenko formulae from which the radial and tangential components of thermal stresses and the time they reach their maximum value at starting are determined.

M. A. T.

Card 1/1

NAZARCHIK, M.M. AND POLSKIY, N.I.

"On the Crisis When Gas Currents in Flat Parallel Channels Unite," in book
Conference on Applications of Gas Dynamics, "TRUD" Series, Publishing Office of
the Academy of Science of the Kazakh SSR, Alma-Ata, 1959.

PHASE I BOOK EXPLOITATION

SOV/5376

Akademiya nauk Ukrayins'koyi RSR. Kyiv. Instytut teploenerhetyky.
Teploobmin ta hidrodynamika (Heat Exchange and Hydrodynamics) Kyiv,
Vydavnytstvo AN UkrSSR, 1959. 76 p. (Series: Its: Zbirnyk prats',
vyp. 16) 1,000 copies printed.

Sponsoring Agency: Akademiya nauk Ukrayins'koyi RSR. Instytut
teploenerhetyky.

Editorial Board: Resp. Secretary: A. Sh. Dorfman, Candidate of
Technical Sciences, O. S. Yeremenko, Candidate of Technical
Sciences, O. O. Kremn'ov, Candidate of Technical Sciences,
V. I. Kuznetsov, Candidate of Technical Sciences, P. I. Lavrov,
Candidate of Technical Sciences, M. M. Nazarchuk, Candidate of
Technical Sciences, V. I. Tolubyns'kyy, Corresponding Member,
Academy of Sciences UkrSSR, I. T. Shvets', Academician, Academy
of Sciences UkrSSR. Resp. Ed.: H. M. Shchoholev, Candidate of
Technical Sciences; Ed.: I. V. Kisina; Tech. Ed.: V. I. Yurchy-
shyn.

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Heat Exchange (Cont.)

SOV/5376

PURPOSE : This collection of articles is intended for scientific workers and engineers concerned with the construction of turbines.

COVERAGE: The booklet, published in Ukrainian, contains 10 articles dealing with problems of improving gas turbines. Results of investigations of processes in the combustion chamber and of heat-exchange processes taking place in turbine components are given. Aerodynamic problems of cascades of turbine blades and of tubes are discussed and theoretical research in boundary-layer problems is considered. Each article is followed by a brief résumé in Russian. No personalities are mentioned. There are no references.

TABLE OF CONTENTS:

Shvets', I. T., and V. O. Khrystych. Experimental Investigations of Basic Characteristics of the Evaporation-Type Combustion Chambers of Gas Turbines 3

Virozub, I. O. Solution of Equations of the Laminar Boundary
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Heat Exchange (Cont.)

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Layer by Generalizing the Kochin-Loytsyans'kyy Method for the
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Nazarchuk, M. M. On Isothermal Flow of Gas in Pipes 23

Horbatyy, Yu. P., A. Sh. Dorfman, N. Y. Pol'skyy, and M. I.
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Borovs'kyy, V. R. Investigations of the Drying Process of Silk
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Temperature Field and Maximum Peripheral Stress in a Cooled
Disk of a Turbine Under Starting Conditions 53

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S/124/63/000/002/008/052
D234/D308

AUTHORS: Nazarchuk, M.M. and Pol'skiy, N.I.

TITLE: Crisis during the flow of a viscous gas in a plane-parallel channel

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 2, 1963, '68, abstract 2B426 (Tr. Soveshchaniya po prikl. gaz. dinamike, 1956, Alma-Ata, AN KazSSR, 1959, 69-76. Discussion 75-76)

TEXT: Theoretical investigation of plane parallel adiabatic motion of a viscous gas in a channel of constant cross-section. Using Iransht's equations and assuming that the velocity profile is convex in the direction of motion, the authors show that, when crisis is reached, the velocity on the channel axis is equal to the local velocity of sound, and the average velocity of the stream is less than the velocity of sound. This conclusion is reached for both laminar and turbulent flow. However, the results of the paper do enable the position of this critical section to be determined. The

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Crisis during the flow ...

S/124/63/000/002/008/052
D234/D308

authors point out the contradiction between the results of the paper and the conclusion of B.A. Zhestkov who showed that, when crisis is reached, the velocity on the channel axis exceeds that of sound, and the average velocity is equal to the local velocity of sound (B.A. Zhestkov, O laminatnom techenii vyazkogo gaza v ploskomi kanale s teploizlirovannymi stenkami (On the laminar flow of viscous gas in a plane channel with thermally insulated walls) M., 1947).

[Abstracter's note: Complete translation]

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26(1), 10(

SOV/21-59-4-9/27

AUTHOR: Nazarchuk, M.M.

TITLE: Exceeding the Velocity of Sound During Gas Flow in a Plane Channel with Heat Exchange

PERIODICAL: Dopevidi Akademii nauk Ukrainy (Ukr. Acad. Sci. Bull.) No. 1, pp 384-385 (USSR)

ABSTRACT: Supplementing the assertion contained in his previous work [Ref 1] that the velocity of sound in a plane channel with parallel thermo-insulated walls can be surpassed by a laminar gas flow only at the channel's end, when the uniformity of pressure within the channel is broken, the author now mathematically shows that it is possible to surpass the velocity of sound without violating the condition $\frac{dp}{dy} = 0$.

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if the channel's walls should be cooled all over, from the crosssection at which the velocity of gas

SOV/21-59-4-9/27
Exceeding the Velocity of Sound During Gas Flow in a Plane
Channel with Heat Exchange

approached the velocity of sound to the channel's
end. There is 1 Soviet reference.

ASSOCIATION: Institut teploenergetiki AN UkrSSR (Institute of
Thermal Power Engineering of the AS UkrSSR)

PRESENTED: By I. T. Sivats, Member of the AS UkrSSR

SUBMITTED: December 8 1958

Card 2/2

BABUKHA, G.L.; NAZARCHUK, H.M.

Method for calculating the heating of polydisperse fine-grained material in a state of suspension. Inzh.-fiz.zhur. no.10:3-9 0 '59. (MIRA 13:2)

1. Institut teploenergetiki AN USSR, Kiev.
(Dynamics of a particle) (Heat--Transmission)

RUZHH-Chuk, 1-1-11

10.2000

82129
S/124/60/000/002/004/012

Translation from: Referativnyy zhurnal, Mekhanika, 1960, No. 2, p. 46, # 1896

AUTHOR: Nazarchuk, M.M.

TITLE: On the Isothermal Gas Flow in Pipes

PERIODICAL: Sb. prats' In-t teploenerg. AN UkrSSR, 1959, No. 16, pp. 23 - 24
(Ukr., Russ. summary)

TEXT: The author comes to the conclusion that isothermal flow is not possible at heat supply to the gas through the walls of the pipe, when the Mach number is in the range $1/k < M < 1$, where k is the ratio of the specific thermal capacities, and M is the Mach number.

V.N. Gusev

44

Card 1/1

24.5200

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~~24(8)~~

SOV/20-129-4-12/68

AUTHORS: Nazarovich, M. M., Pol'skiy, N. I.

TITLE: The Asymptotic Behavior of the Solutions of a Problem of Heat Exchange

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 4, pp 759-761
(USSR)

ABSTRACT: In some technical problems it is necessary to investigate problems concerning the heat exchange between a liquid or gaseous coolant and the solid particles suspended in it. In consideration of some simplifying conditions, many such problems may be reduced to the following: A heat-insulated vessel is assumed to be filled with a coolant, for which weight, specific heat, and temperature are given. At the instant $\tau = 0$ a mixture is filled into the vessel, which consists of sufficiently fine particles. The latter consist of n groups, each of which possesses definite values of the heat transfer coefficient, of the heat transfer area, of the specific heat, and of the total weight. The initial temperature of all particles is assumed to be equal to or less than the coolant temperature. If heat transfer occurs only between the coolant and the particles to be investigated, the following system of linear differential

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SOV/20-129-4-12/68

The Asymptotic Behavior of the Solutions of a Problem of Heat Exchange

equations with constant coefficients is obtained:

$$\frac{dx_1}{d\tau} + (a_1 + \Delta_1)x_1 + a_2x_2 + \dots + a_nx_n = 0$$

$$\frac{dx_2}{d\tau} + a_1x_1 + (a_2 + \Delta_2)x_2 + \dots + a_nx_n = 0$$

.....

$$\frac{dx_n}{d\tau} + a_1x_1 + a_2x_2 + \dots + (a_n + \Delta_n)x_n = 0,$$

where x_1 denotes the dimensionless difference of the temperatures of the coolant and the particles of the i -th group. The coefficients a_i , Δ_i are positive and are determined by the constants given above. Besides, all Δ_i are different. The matrix of the above system of differential equations forms a certain operator L in the n -dimensional space, which is represented as the sum $L = \Delta + A$ of two operators. The eigenvalues of the operator L

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SOV/20-129-4-12/68

The Asymptotic Behavior of the Solutions of a Problem of Heat Exchange

Δ are real numbers $\Delta_1, \Delta_2, \dots, \Delta_n$, which differ from one another. The operator A is one-dimensional: It conveys every vector $\vec{x} = \{x_1\}$ of the space into a one-dimensional totality of vectors $A\vec{x}$. If $a_1 > 0$, the operator $L = \Delta + A$ has no eigenvalues the real part of which would agree with one of the Δ_1 . In each interval $(\Delta_1, \Delta_2); (\Delta_2, \Delta_3); \dots, (\Delta_{n-1}, \Delta_n); (\Delta_n, +\infty)$ there is at least one eigenvalue of the operator $M = \Delta + \varepsilon B$, where $\varepsilon > 0$ holds, and B is given by a matrix, the elements of which are all equal to unity. Theorem 1 of the present paper says: All eigenvalues $\lambda_1, \lambda_2, \dots, \lambda_n$ of the matrix L are real and they all lie within the above-mentioned intervals. The general solution of the initially written down system of equations may be written down in the form

$$x_1 = \sum_{k=1}^n \alpha_1^{(k)} e^{-\lambda_k \tau} \quad (i = 1, 2, \dots, n).$$

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Here the $\alpha_1^{(k)}, \alpha_2^{(k)}, \dots, \alpha_n^{(k)}$ denote the components of the

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The Asymptotic Behavior of the Solutions of a Problem of Heat Exchange

eigenvector $\alpha^{(k)}$, which correspond to the eigenvalue λ_k . An investigation of the behavior of this solution in the case of great τ leads to the following theorem: The temperature of the particles of that group which begins to become heated more slowly than the other groups, will asymptotically approach the coolant temperature from below, whereas the temperature of all other particle groups approaches the coolant temperature from above. There is 1 Soviet reference.

ASSOCIATION: Institut teploenergetiki Akademii nauk USSR
(Institute of Heat-power Engineering of the Academy of Sciences of the UkrSSR)

PRESENTED: July 24, 1959, by N. N. Bogolyubov, Academician

SUBMITTED: July 15, 1959

Card 4/4

NAZARCHUK, M I I

PHASE I BOOK EXPLOITATION

SOV/4219

Dorfman, Abram Shlemovich, Mikhail Mikhaylovich Nazarchuk, Naftul Iosifovich
Pol'skiy and Mikhail Il'ich Saykovskiy

Aerodinamika diffuzorov i vykhlopnykh patrubkov turbomashin (Aerodynamics of Dif-
fusers and Exhaust Outlets of Turbines) Kiyev, Izd-vo AN UkrSSR, 1960.
188 p. Errata slip inserted. 3,000 copies printed.

Sponsoring Agency: Akademiya nauk Ukrainskoy SSR. Institut teploenergetiki.

Ed. of Publishing House: I. V. Kisina; Tech. Ed.: N. P. Rakhlina.

PURPOSE: This book is intended for scientists and engineers working in the field
of applied gas dynamics. It will also be of interest to turbine designers.

COVERAGE: The book presents methods for calculating gas flows in straight-sided
and curved-contour diffusers and develops methods for designing turbine exhaust
nozzles. Methods of experimental investigation of nozzles are considered as well
as the effect of nozzle losses on the efficiency of the turbines. The book out-
lines the basic results of a study of the flows of viscous incompressible fluids

Card 1/6

Aerodynamics of Diffusers and Exhaust (Cont.)

30V/4219

in straight-sided and conical diffusers, studies in detail viscous gas flow in conical diffusers, and puts forth a method for calculating flow losses and flow parameters. The concept of the local expansion angle of a diffuser which permits using the results of the investigation of conical diffusers for the evaluation of the losses in several types of curved-contour diffusers is introduced. Particular attention is given to the study of annular diffusers. The authors state that a considerable part of the data given in this book appears for the first time. No personalities are mentioned. There are 39 references: 37 Soviet, 2 German.

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1. Equation of state	7
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83143

S/170/60/003/006/007/011

B013/B067

11.9200

AUTHORS: Nazarchuk, M. M., Pol'skiy N. I.

TITLE: Solution of a Thermophysical Problem

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1960, Vol. 3, No. 6,
pp. 76 - 81

TEXT: The problem of heat transfer² between liquid or gaseous heat carriers and the solid particles suspended therein was solved by the matrix theory and functional analysis. It is assumed that a heat-insulated tank contains a heat carrier with a weight G , specific heat c_p , and a temperature t_0 . At the time $\tau = \tau_0$ a mixture of solid particles with a temperature $t_0' < t_0$ is filled into the tank. The particles in this mixture are classified into n classes according to their surface. Assuming that heat exchange takes place only between the heat carrier and the particles, it is easy to give a system of equations describing the temperature of the heat carrier and of the particles of n classes. The authors deduce the differential equation (2): $d\theta_k/d\tau = \Delta_k(\theta - \theta_k)$, ($k = 1, 2, \dots, n$).

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Solution of a Thermophysical Problem

S/170/60/003/006/007/011
B013/B067

where $\theta = (t - t'_0)/(t_0 - t'_0)$, $\theta_k = (t_k - t'_0)/(t_0 - t'_0)$, and
 $\Delta_k = \alpha_k F_k / c_k G_k$. In the latter formula, F_k denotes the surface, c_k the
 thermal capacity, and α_k the heat exchange coefficient of the k-th
 particle class. In a detailed study of this system of equations the
 authors show the following: The particle temperature of that group which
 is heated more slowly than the others, will be lower than the tempera-
 ture of the heat carrier after a sufficiently long period of time in
 which the temperature of the particles of all other groups will be
 higher than the temperature of the heat carrier. There are 3 Soviet
 references. 4

ASSOCIATION: Institut teploenergetiki AN USSR, g.Kiyev (Institute of
 Thermal Power Engineering AS UkrSSR, Kiyev)

Card 2/2

NAZARCHUK, M.M.; SEMILET, Z.V.

lateral fluid-film flow about a pipe. Zbir.prats' Inst.
tepl.AN USRS no.18:85-89 '60. (MIRA 14:12)
(Pipe--Hydrodynamics)

BABUKHA, G.L. [Babukha, H.L.]; NAZARCHUK, M.M.

Determining optimum gas speed during the heating of a
polydispersed material in suspended state. Zbir.prats' Inst.
topl.AN URSR no.18:90-96 '60. (MIRA 14:12)
(Thermodynamics)

NAZARCHUK, M.M.

Calculation of heat losses in conduits. Zbir. prats' Inst. tepl.
AN URSR no. 20:22-27 '60. (MIRA 14:4)
(Gaspipes) (Heat--Transmission)

S/021/61/000/012/009/011
D251/D305

AUTHORS: Nazarchuk, M. M., and Stel'makh, S. S.

TITLE: On the connection between surface friction and heat-exchange

PERIODICAL: Akademiya nauk Ukrayins'koyi RSR. Dopovid1, no. 12, 1961, 1590-1593

TEXT: The authors state the result obtained by E. A. Sidorov (Ref. 1: ZhTF, 27, 560, 1957) for the relationship between the thermal and dynamical characteristics for a laminar flow of incompressible liquid

$$St = \frac{1}{2} \frac{c_f}{Pr} \left(\frac{\partial \bar{t}}{\partial \bar{u}} \right)_{y=0} \quad (2)$$

where $\bar{u} = u/U$, $\bar{t} = t/t_\infty = \frac{T - T_W}{T_\infty - T_W}$, where $St = \alpha/\rho w c_p$ is Stanton's criterion, c_f is the local coefficient of friction, T , T_W , T_∞ are

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On the connection between ...

S/021/61/000/012/009/011
D251/D305

the temperatures of the liquid, the wall and the free stream respectively, $U = u|_{y=\infty}$. [Abstractor's note: Some symbols not explained.] This relationship may be adapted for a flow of gas, with

$$t = \frac{\theta - T_W}{T_\infty - T_W}$$

where θ is the temperature of retardation and $T_\infty = \theta|_{y=\infty}$. These formulae are applied to the case of temperature inconstancy on the wall. The ratio between the variable temperature of the wall and T_W and the initial temperature of the wall T_{W0} is shown to be

$$\frac{T_W}{T_{W0}} = \frac{Ac^n \left(1 + \frac{p}{p_0} \frac{x}{Re_m Lc} \right)^n + 1}{Ac^n + 1}$$

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On the connection between ...

S/021/61/000/012/009/011
D251/D305

where A, C are positive constants, L is a characterized linear dimension, and

$$\frac{p}{p_0} = \left(1 - \frac{U}{U_m}\right)^{\frac{1}{k-1}}; U_m$$

$$Re_m = \frac{U_m L}{\nu_\infty}$$

Simplification in the case

$$\frac{p}{p_0} \frac{x}{Re_m L_c} \ll 1$$

leads to the conclusion that in the case of laminar flow of gas, a small inconstancy in the wall temperature may have a considerable

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On the connection between ...

S/021/61/000/012/009/011
D251/D305

effect on the ratio local heat loss : coefficient of friction.
There are 2 Soviet-bloc references.

ASSOCIATION: Instytut teploenergetyky AN URSR (Institute of Heat
and Power Engineering AS UkrSSR) ✓

PRESENTED: by I. T. Shvets', Academician AS UkrSSR

SUBMITTED: May 24, 1961

Card 4/4

S/124/62/000/005/009/048
D251/D308

AUTHOR: Nazarchuk, M.M.

TITLE: A bounded case of a homogeneous stream of gas

PERIODICAL: Referativnyy zhurnal. Mekhanika, no. 5, 1962, 14,
abstract 5B69 (Zb. prats'. in-t teploenerh, AN URSS,
1961, no. 22, 26 - 28)

TEXT: The equation is considered of a one-dimensional steady stream of gas in a channel of constant cross-section in the presence of friction and heat-exchange. It is shown that one of the possible solutions of this equation corresponds to the case of the simultaneous conversion to zero of the velocity and absolute temperature of the gas in the current and also of the temperature of retardation. Reviewer's comments: The existence, found by the author, of the trivial solution for the case of complete absence of mechanical or thermal motion presents itself as quite obvious, but has no physical meaning. [Abstractor's note: Complete translation].

Card 1/1

S/526/62/000/024/009/013
D234/D308

AUTHORS: Milovych, S.V. and Nazarchuk, M.M.
TITLE: Character of gas flow in a channel near crisis
SOURCE: Akademiya nauk Ukrayins'koyi RSR. Instytut teploener-
hetyky. Zbirnyk prats'. no. 24, 1962. Teploobmin ta
hidrodynamika, 98-103
TEXT: The authors consider a turbulent flow of viscous
gas in a plane parallel channel of thickness $2h$, assuming $Pr = 1$,
and absence of heat exchange. The thickness of the viscous sublayer
is regarded as small in comparison with h . The equation relating
the dimensionless velocity U on the channel axis with the form para-
meter n at the instant of crisis is

$$U^4 - \frac{2k}{k+1} (2n+1)U^2 + \frac{k-1}{k+1} (2n+1)(4n^2+2n+1) = 0. \quad (18)$$

It is concluded that different pairs of values (U, n) correspond to
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Character of gas flow ...

S/526/62/000/024/009/013
D234/D308

different critical lengths of the channel. If U at the inlet is equal to the velocity of sound the crisis occurs at the inlet. There are 2 figures.

Card 2/2

NAZARCHUK, Mikhail Mikhaylovich, POL'SKIY, N.I., kand.fiz.-matem.nauk,
otv.red.; LABINOV, S.D., red.; BABENKO, R.Yu., tekhn.red.

[Gas flow in pipes and heat transfer] Tesheniia gaza v kana-
lakh pri nalichii teploobmena. Kiev, Izd-vo AN Ukr.SSR,
1963. 121 p. (MIRA 16:8)
(Gas flow) (Heat--Transmission)

PASECHNIK, M. V.; BARCHUK, I. F.; VERTEBNYY, V. F.; VLASOV, M. F.; KOLOTTY, V. V.;
MAYSTRENKO, A. H.; MOSTOVOY, V. I.; NAZARCHUK, M. M.; PILIPETS, D. T.

"The parameters of the WWR-M reactor of the Inst of Physics, AS UKSSR and
its' application in nuclear physics research."

report submitted for 3rd Intl Conf, Peaceful Uses of Atomic Energy, Geneva,
31 Aug-9 Sep 64.

CHIRKOV, Yu.I.; NAZARCHUK, M.N.; KUCHERYAVENKO, I.A.

Improving stoping operation techniques at the "Saksagan"
Mine. Met. i gornorud. prom. no.1:72-74 Ja-F '64.

(MIRA 17:10)

NAZARCHUK, M. M. (Institute of technical thermal physics of Academy of Sciences of Ukrainian SSR)

"Thermodynamic analysis of effectiveness of feed of heat to subsonic flows of gas."

Report presented at the Section on Thermodynamics, Scientific Session, Council of Acad. Sci. Ukr SSR on High Temperature Physics, Kiev, 2-4 Apr 1963.

Reported in Teplofizika Vysokikh temperatur, No. 2, Sep-Oct 1963, p. 321, JPRS 24,651. 19 May 1964.

TOLUBINSKIY, V.I., otv. red.; FEDOSEYEV, V.A., doktor fiz.-mat. nauk, zam. otv. red.; DORFMAN, A.Sh., kand. tekhn. nauk, red.; DUSHCHENKO, V.P., kand. fiz.-mat. nauk, red.; DYBAN, Ye.P., kand. tekhn. nauk, red.; KREMNEV, O.A., doktor tekhn. nauk, red.; NAZARCHUK, M.M., kand. tekhn. nauk, red.; ORNATSKIY, A.P., kand. tekhn. nauk, red.; PAVLOVICH, V.P., doktor tekhn. nauk, red.; SHVETS, I.T., kand. tekhn. nauk, red.; SHCHEGOLEV, G.M., kand. tekhn. nauk, red.; SHCHERBAN', A.N., akademik, red.; SYTNIK, N.K., red.

[Thermophysics and heat engineering] Teplofizika i teplo-tekhnika. Kiev, Naukova dumka, 1964. 339 p.

(MIRA 18:1)

1. Akademiya nauk URSR, Kiev. Instytut tekhnichnoy teplofizyky. 2. Institut tekhnicheskoy teplofiziki AN Ukr.SSR, Kiev (for Dorfman, Dyban, Nazarchuk, Tolubinskiy, Shchegolev). 3. Kiyevskiy tekhnologicheskiy institut pishchevoy promyshlennosti (for Dushchenko, Pavlovich). 4. Kiyevskiy politekhnicheskiy institut (for Ornatskiy).

(Continued on next card)

TOLUBINSKIY, V.I.--- (continued). Card 2.

5. Odesskiy universitet (for Fedoseyev). 6. Kiyevskiy universitet (for Shvets). Akademiya nauk Ukr.SSR (for Shcherban', Shvets). 7. Chlen-korrespondent AN Ukr.SSR (for Tolubinskiy). 8. Gosudarstvennyy komitet Soveta Ministrov po koordinatsii nauchno-issledovatel'skikh rabot (for Shcherban').

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APPROVED FOR RELEASE: Monday, July 31, 2000

CIA-RDP86-00513R001136220

ACC NR: AR6025705

SOURCE CODING: 01/0, 00/000, 004, 000, 000

AUTHOR: Nazarchuk, M. M.

TITLE: One peculiar property of the speed profile of a gas flowing in a pipe

SOURCE: Ref. zh. Elektrotekhnika i energetika, Abs. 4035

REF SOURCE: Gidraeromekhanika. Resp. mezhved. nauchno-tekhn. sb. vyp. 1, 1965, 15-18

TOPIC TAGS: gas flow, gas dynamics

ABSTRACT: The experimentally known effect of speed-profile fill as a result of a profile deformation toward the outlet of a long pipe that operates at a sonic speed at the outlet is theoretically investigated. It is assumed that the pressure is a function of longitudinal coordinate only and that the relations among the average mass speed, average density and pressure are describable by a single-dimensional model. With this approach, it is proved that the effect of speed-profile fill is characteristic to the gas flow in pipes. The lowest speed value at which the above effect is ensured is evaluated. It is found that the intensity of the speed-profile fill along the pipe increases with the rate of flow. The smaller the degree of fill, the earlier the speed profile begins being filled. These conclusions are in good agreement with experimental results. Yu. Lashkov [Translation of abstract]

SUB CODE: 17 20/

UDC: 532-5

Card 1/1

"APPROVED FOR RELEASE: Monday, July 31, 2000

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... $\frac{k-1}{k+1}$... and is equal to the speed of sound ...

27Apr64

SCB CODE. ME

NO RES BOW: 004

07-003: 001

"APPROVED FOR RELEASE: Monday, July 31, 2000

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APPROVED FOR RELEASE: Monday, July 31, 2000

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APPROVED FOR RELEASE: Monday, July 31, 2000

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... temperature is practically the same on both sides, and that

L 26480-66 EWP(m)/EWT(1)/EWA(d)/EWA(1) OS

ACC NR: AT6008141

UR/0000/65/000/000/0032/0036

AUTHOR: Nazarchuk, M.M.

ORG: None

TITLE: On the coefficient of resistance for a gas flow in a round pipe at near sonic velocity

SOURCE: AN UkrSSR. Tcheniya zhidkostey i gazov (Flows of liquids and gases). Kiev, Naukova dumka, 1965, 32-36

TOPIC TAGS: fluid mechanics, pipe flow, gas flow, gas viscosity, hydraulic resistance, approximation, polynomial, temperature dependence, compressible fluid

ABSTRACT: Behaviour of the hydraulic coefficient of resistance for a gas flow in a round pipe is studied near and at the sonic velocity.. It is intended to improve upon a conventional approximate approach based upon linear shear distribution along the pipe radius. The linear approach leads to a monotonous decrease of the resistance coefficient up to the critical velocity point. It is noted that the linear hypothesis is not correct for a compressible fluid case, and that it leads to a constant average mass velocity along the pipe length. With the pipe radius $r = 1 - y$, and usual notations:

$$(d/dx) \left(2 \int_0^1 \rho u^2 \cdot r \cdot dy \right) = 0 \quad (1)$$

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ACC NR: AT6008141

which contradicts the experimental evidence of a rising average velocity u_{av} along the length of pipe, x , particularly near the critical flow state, where du_{av}/dx tends to infinity. Approximation of the shear tension $\tau(y)$ by a third order polynomial with the utilization of conditions of symmetry, wall boundary and axis specifics is introduced. Application of other suitable approximations (e.g. for the viscosity-temperature dependence), and analytical procedures, enable the author to arrive at a comprehensive expression for the hydraulic resistance coefficient. The expression is essentially a product, $A \cdot B$ of a complicated, but slowly changing factor A by the factor B :

$$B = (1/u_{av}) \cdot (du_{av}/dx) \quad (2)$$

The expression for the resistance coefficient can therefore account for the initial decrease in the resistance coefficient with the velocity of flow increase, followed by a decisive increase of the resistance coefficient close to the critical point, where du_{av}/dx experiences a sharp rise. Orig. art. has 19 formulas.

SUB CODE: 20 / SUBM DATE: 18Apr64/ ORIG REF: 002/ OTH REF: 002

Card 2/2

L 2647:-66 EWP(m)/EWT(1)/ETC(f)/EPF(n)-2/EWG(m)/EWA(d)/EWA(1) WW/GS

ACC NR: A7a008144

UR/0000/65/000/000/0048/0050

AUTHOR: Mendeleyeva, T.V.
date of technical sciences

; Nazarchuk, M.M. (Candi-

ORG: None

TITLE: On the calculation of one-dimensional gas flow parameters in pipes with heat exchange

SOURCE: AN UkrSSR. Techeniya zhidkostey i gazov (Flows of liquids and gases). Kiev, Naukova dumka, 1965, 48-50

TOPIC TAGS: fluid mechanics, gas flow, pipe flow, heat exchange, hydraulic resistance

ABSTRACT: This paper deals with the estimate of errors in a simple approximate formula for the calculation of one-dimensional gas flow characteristics in pipes of a constant cross section with heat exchange, published by the authors elsewhere:

$$\theta_e / \theta_b = (\theta_e / \theta_b)_{\zeta=0} \cdot \left[1 - \int_0^L (\chi(M_b) - \chi(M_e)) \right] \quad (1)$$

with L - length of channel in calibers, \int hydraulic coefficient of resistance, M -

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L 26478-66

ACC NR: AT6008144

Mach velocity coefficient, θ_e, θ_b braking temperatures at the end and at the beginning of the channel, respectively. The present study was motivated by the publication of a precise solution of the investigated flow problem elsewhere by R.N. Noyes (Trans. A.S.M.E. Ser C. 1961, 3,4) and the consequent possibility to appraise the errors of the simpler approximate formula (1). Analysis showed that the errors of (1) depend basically upon the magnitudes of L and the ratio $\varphi = (\theta_e/\theta_b)/(\theta_e/\theta_b)_{\max} = 0$. Domain

boundaries for errors under 1% are discussed and the results presented in form of graphs and specific statements. It is concluded that formula (1) is fully applicable for the approximate calculation of gas flow characteristics in pipes with heat exchange, over a practically sufficiently wide range of variation of pertinent parameters. Orig.art. has: 2 figures and 3 formulas.

SUB CODE: 20/

SUBM DATE: 15Mar64/

ORIG REF: 001 /

OTH REF: 001

Card 2/2

L 28066-66 EWP(k)/EWT(m)/EWP(e)/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AP6015347

(A)

SOURCE CODE: UR/0226/66/000/005/0001/0606

AUTHOR: Dobrovol'skiy, A. G.; Nazarchuk, N. V.

ORG: Institute of Problems of Material Science, AN UkrSSR (Institut problem materialovedeniya AN UkrSSR)

TITLE: Slip casting of molybdenum disilicide

SOURCE: Poroshkovaya metallurgiya, no. 5, 1966, 1-8

TOPIC TAGS: molybdenum disilicide, metal casting, slip casting

ABSTRACT: Slip casting of molybdenum disilicide crucibles 30—50 mm high and 20 or 45 mm in diameter, and protective thermocouple tubes 160 or 60 mm long and 25 or 10 mm in diameter has been studied. Molybdenum-disilicide powder containing 64.2% Mo, 34% Si, 0.18% Fe and 0.6% C with a particle size from less than 2 to 21 mkm was used. A slip containing over 75% particles of less than 2 mkm was prepared by grinding molybdenum disilicide powder, with distilled water used as a suspending medium. The casting properties of the water slip depended on the pH, solid-to-liquid ratio, and casting temperature. The slip had two casting ranges: at a pH of 4—5 or 9—11. The latter pH ensured better casting properties and higher density: up to 3.76 g/cm³ as compared to 3.38 g/cm³ for pH = 4—5. The

Card 1/2

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ACC NR: AP6015347

density of the slip increased as the solid-to-liquid ratio increased up to 75:25, and then sharply dropped. Increasing the casting temperature to 45C increased the solidification rate and the thickness of casting wall. Castings sintered in a hydrogen atmosphere at 1600—1650C for 2 hr had a density of 5.5 g/cm³, which corresponds to about 8% porosity. Orig. art. has: 8 figures. [AZ]

SUB CODE: 11, 13/ SUBM DATE: 22Jun65/ ORIG REF: 005/ OTH REF: 002/ ATD PRESS:

4261

Card 2/2 (10)

S/073/60/026/005/019/019
B004/B063

AUTHOR: Nazarchuk, T. K., Candidate of Chemical Sciences.

TITLE: Inter-institute Seminar on the Chemistry of Difficultly
Meltable Compounds

PERIODICAL: Ukrainskiy khimicheskiy zhurnal, 1960, Vol. 26, No. 5,
pp. 676 - 677

TEXT: An Inter-institute Seminar on chemical analyses and properties of
difficultly meltable compounds took place at the Institut metallokeramiki
i spetsial'nykh splavov AN USSR (IMSS AN USSR - Institute of Powder
Metallurgy and Special Alloys of the AS UkrSSR) from April 19 to 21, 1960.
It was attended by delegates of 22 organizations including VNIITS (All-
Union Scientific Research Institute of Hard Alloys), VNIIASh, Institut
metallurgii im. Baykova (Institute of Metallurgy imeni Baykov),
TsNIIChERMET (Central Scientific Research Institute of Ferrous
Metallurgy), NIIKhIMMASH (All-Union Design and Scientific Research
Institute of Chemical Machinery), and TsNIITMaSh (Central Scientific
Research Institute of Technology and Machine Building). More than

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Inter-institute Seminar on the Chemistry of
Difficultly Meltable Compounds

S/073/60/026/005/019/019
B004/B063

on their carbide and ferrite components. K. D. Modylevskaya of IMSS discussed the analysis of silicides of transition metals. The following reports were read: "Rapid Analysis of SiC" (IMSS), "Phase Shift Analysis of Carborundum Refractory Material With Nitride Bond" (Institut ogneuporov, Leningrad - Institute of Refractory Materials, Leningrad), and "On Some Physicochemical Properties of Melts of the System B-Si-C" (VNIIASh, Leningrad). T. Ya. Kosolapova of IMSS spoke about the analysis of chromium carbides, Ye. Ye. Kotlyar of IMSS and V. G. Shcherbakov of VNIITS about the analysis of titanium carbides, and V. N. Yurkevich of VNIITS about the detection of O_2 in titanium carbide. The preparation of standard samples of Ti and Cr borides, Mn silicides, Si nitrides, and B boron carbides, as well as the development of standard analytical methods has been recommended. The next session of the Seminar is scheduled for the end of 1961. ✓

Card 3/3

NAZARCHUK, T. N.

(5)
 Use of colored reagents in colorimetry. A. K. Babko
 and T. N. Nazarchuk Inst. Gen. Inorg. Chem., Acad. Sci.
 Ukr. S.S.R., Kiev. Zhur. Anal. Khim. 9, 90-100 (1954).
 In detg. small quantities of Al as alizarate, excess reagent
 interferes. This interference is eliminated by extg. the
 excess with ether. The method is particularly suitable for
 detg. Al in Zn. In this case, the presence of Fe interferes.
 The Fe in the dissolved sample is converted to thiocyanate
 and the latter is extd. with a 5:2 mixt. of BuOH and Et₂O.
 After neutralizing excess acid and buffering the soln. at pH
 5, a satd. alc. soln. of alizarin is added, the excess reagent
 is extd. with ether, and Al alizarate is detd. colorimetrically
 by comparing with carefully prepd. known solns. of Al
 alizarate. M. Hosh

USSR/Chemistry - Addition products

Card : 1/1 Pub.116 - 14/20

Authors : Nazarchuk, T. N.

Title : Alizarin S - molybdate compound

Periodical : Ukr. khim. zhur. 20, Ed. 4, 417 - 423, 1954

Abstract : The reaction between molybdate and alizarin S was investigated to determine its applicability for colorimetric determination of Mo. The light absorption spectra of solutions containing $\text{Na}_2\text{MoO}_4 \cdot 2\text{H}_2\text{O}$ and $\text{C}_{14}\text{H}_8\text{O}_4\text{-S}$ were measured at various solution acidities by means of a photometer. The results are shown in tables. Eight references: 2-Ukrainian; 3-USSR; 2-German and 1-USA, (1892-1951). Graphs.

Institution : Acad. of Sc. Ukr-SSR, Institute of Gen. and Inorganic Chemistry

Submitted : April 25, 1954

USSR .

Volumetric method for determination of aluminum with
salicylic acid indicator. A. K. Babitskiy and T. N. Nazarchuk.
Zhurnal Khim. Fiz. 26: 678 (1954) [Chem. Abstr. 48: 12154 (1954)]
The solution to be analyzed is acidified with hydrochloric acid and
the solution is then treated with salicylic acid.

1. The solution to be analyzed is acidified with hydrochloric acid and
the solution is then treated with salicylic acid.

NAZARCHUK, T. N.

NAZARCHUK, T. N. - "Study of Chemico-analytical Properties of Compounds of Certain Metals with Oxy-antraquinones." Acad Sci Ukraine SSR, Inst of General and Inorganic Chemistry, Kiev, 1955 (Dissertations For the Degree of ~~Candidate of Chemical Sciences~~)

SO: Knizhnaya Letopis' No. 26, June 1955, Moscow

NAZARCHUK, T. N.

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1032 Electrolytic method of obtaining analytical concentrates for the determination of impurities in copper. A. K. Dubko, P. V. Marchenko and T. N. Nazarchuk (Inst. Gen. Inorg. Chem. Acad. Sci. USSR), *Zashch. Lab.*, 1975, 41 (8), 662-664. The method is based on the simultaneous anodic dissolution of the sample and the cathodic deposition of Cu in Hg. Mercury (100 g) is placed in a 200-ml beaker with 50 ml of water, 1 ml of H_2SO_4 and 1 ml of HNO_3 . A connection to the Hg is made through a platinum wire in a glass tube. The sample of copper, 10 g of plate or rod, is suspended in the solution. A current of 2 to 6 amp. is passed for 4 hr., about 3 to 4 g of the sample dissolves. The sample is washed and weighed, the difference being taken as the sample weight. A platinum anode is inserted and the electrolysis is continued for 30 min. to remove Cu from the solution. The amalgam is shaken for 30 min. with a dil. copper salt solution. Tin, Pb and Bi are completely extracted from the amalgam and can be determined colorimetrically. With Pb, the latter part of the electrolysis can be omitted since Pb does not enter the amalgam while copper salts are present. Nickel, Sb and Fe cannot be completely extracted from the amalgam. A platinum cathode is used instead of Hg and the electrolyte contains 2 ml of HNO_3 and 1 ml of H_2SO_4 in 50 ml of water. The sample is dissolved completely, a platinum anode is inserted and the electrolysis is continued until the solution is colourless. Traces of Cu are removed with H_2S prepared from Na_2S and Fe and Ni are determined in the filtrate. G. S. Surin

RM

BABKO, A.K.; HAZARCHUK, T.N.

Colored compounds of metals with hydroxyanthraquinones. Rab.
po khim.rastv.i kompl.sosd. no.2:199-215 '59.

(MIRA 13:4)

(Anthraquinone) (Organometallic compounds)

66295

SOV/78-4-12-3/35

5(a) 15. 2220

AUTHOR: Nazarchuk, T. N.

TITLE: Chemical Stability of Boron Carbide

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 12,
pp 2665-2669 (USSR)

ABSTRACT: In a survey of publications the author summarizes the investigations made so far concerning the stability of boron carbide to acids, alkalies, and oxidizing agents. The following Soviet scientists are mentioned: A. I. Miklashevskiy (Ref 2), I. G. Shafran, M. V. Pavlova (Ref 3), G. V. Samsonov, O. I. Kopnina (Ref 4), G. V. Meyerson, and G. V. Samsonov (Ref 6). Next, the author describes the method he used: treatment of powdered B_4C with various reagents, determination of B, Fe, and Al in the filtrate. Table 1 contains the results of treatment of B_4C with concentrated hydrochloric, sulfuric, nitric, and perchloric acid as well as mixtures of 1) hydrofluoric acid and

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Chemical Stability of Boron Carbide

sulfuric acid, 2) hydrofluoric acid and nitric acid, 3) sulfuric acid and nitric acid as well as of 4) hydrochloric acid and perchloric acid within the temperature range 20-280°. Mixtures of nitric acid and sulfuric acid, nitric acid and hydrofluoric acid as well as of sulfuric acid and hydrofluoric acid were the most aggressive ones. Moreover, the author checked the stability of B_4C to nitric, hydrochloric, sulfuric, and perchloric acid diluted in the ratio 1:1 (Table 2). B_4C turned out to be highly stable to concentrate and dilute acids. On treatment with dilute acids, primarily impurities (Fe, Al) and small quantities of B entered into solution. To check the actual stability of B_4C , the author treated a sample with boiling nitric acid and hydrochloric acid (1:1), which had already been acidified beforehand. Complete insolubility was observable (Table 3). The boron impurities entering into

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Chemical Stability of Boron Carbide

solution during the first acidification are likely to result from B_2O_3 . An attempt to obtain absolutely pure boron carbide by repeated acidification failed. The impurities partially entered into solution, but B_4C still contain Fe and Al after the treatment. Table 4 contains the results of treatment of B_4C with NaOH, NaOH + H_2O_2 , and NaOH + Br_2 in various concentrations (between 1 and 25%) at 20 and 100° for 1-40 h. The boron carbide proved to resist the action of alkalies and oxidizing agents. There are 4 tables and 11 references, 7 of which are Soviet.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov Akademii nauk USSR
(Institute of Cermets and Special Alloys of the Academy of Sciences, UkrSSR)

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SOV/78-4-12-3/35

Chemical Stability of Boron Carbide

SUBMITTED: August 2, 1958

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SOV/75-14-2-5/27

5(4), 5(2), 5(3)

AUTHORS: Babko, A. K., Nazarchuk, T. N.

TITLE: Spectrophotometric Investigation of the Colored Complexes of Tetravalent Tin With Some Reagents Containing OH Groups (Spektrofotometricheskoye issledovaniye okrashennykh kompleksov chetyrekhvalentnogo olova s nekotorymi reaktivami, sodержashchimi OH-gruppy)

PERIODICAL: Zhurnal analiticheskoy khimii, 1959, Vol 14, Nr 2, pp 174-180 (USSR)

ABSTRACT: The present paper gives a survey of the advantages and disadvantages of some dyes used for the photometric determination of tetravalent tin. Some hydroxyanthraquinones (alizarin, quinizarin, quinalizarin), quercetin, hematoxylin and stilbazo were comparatively investigated by the spectrophotometric method. It was found that the optical characteristics are the most important criteria for the suitability of these reagents. In the investigations the differences between the absorption spectra of the H-form of the reagent and the spectrum of the corresponding tin complex were used as criteria for the sensitivity and accuracy of the determination. The color of all reagents investigated becomes more intensive

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Spectrophotometric Investigation of the Colored Complexes of Tetravalent Tin With Some Reagents Containing OH Groups

with increasing pH value; for this reason the interval between the pH value of the formation of the complex and the pH value at which the often intensively colored anionic form of the dyes (R^-) is formed is of great importance for the sensitivity of the determination. Among the dyes investigated quercetin, hematoxylin (oxidized) and stilbazo reveal the highest sensitivity. For their comparison the absorption spectra of the HR form and of the SnR form were shown on a diagram. The comparisons showed that stilbazo shows the greatest sensitivity in the qualitative detection of tin. In the detection of tin by stilbazo no reagent excess should be used because the self-absorption of stilbazo may falsify the results. Since, however, in a photometric determination of tin an excess of the reagent is necessary, this self-absorption, which in all parts of the spectrum superimposes the absorption of the tin complex, renders the quantitative determination of tin very difficult. Hematoxylin is somewhat less sensitive than stilbazo, it is, however, of great advantage for the quantitative determination since its self-absorption, compared to that of the tin complex, is only unimportant.

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Spectrophotometric Investigation of the Colored Complexes of Tetravalent Tin With Some Reagents Containing OH Groups

Quercetin is still less sensitive, in the photometric determination it shows, however, the same advantages as hematoxylin. Besides, quercetin is easily accessible. Fluctuations in the pH value of the solution to be analyzed show the least effects in the use of quercetin for the photometric determination because the free reagent in the part of the spectrum in which the absorption maximum of the tin complex is found does not absorb at all. The color of the tin-quercetin complex is stable at a pH = 3 - 6. The color of the tin-hematoxylin complex also varies only little between pH = 2 and 6. The properties for the determination of tin of the three dyes mentioned which are important are tabulated (pH values of applicability, λ_{max} of the absorption of the tin complex, molar absorption coefficients of the reagent and the corresponding complex). On the basis of the results obtained the optimum conditions for the photometric determination of tin by quercetin, hematoxylin and stilbazo are determined. These conditions are described in detail in this paper. There are 6 figures, 1 table, and 12 references, 6 of which are Soviet.

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SOV/75-14-2-5/27

Spectrophotometric Investigation of the Colored Complexes of Tetravalent
Tin With Some Reagents Containing OH Groups

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN USSR, Kiev
(Institute of General and Inorganic Chemistry of the AS UkrSSR,
Kiev)

SUBMITTED: August 23, 1957

Card 4/4

KOTLYAR, Ye.Ye.; NAZARCHUK, T.N.

Determination of free boron in boron carbide, boron nitride, and
in alloys based on them. Zhur.anal.khim. 15 no.2:207-210
Kr-Ap '60. (MIRA 13:7)

1. Institut metallokeramiki i spetsial'nykh splavov AN USSR,
Kiyev.
(Boron--Analysis) (Boron carbide) (Boron nitride)

S/073/60/026/001/016/021
B004/B054

AUTHORS: Kopylova, V. P. and Nazarchuk, T. N.

TITLE: Study of the Conditions for Titanium Precipitation in the Presence of Trilon B

PERIODICAL: Ukrainskiy khimicheskiy zhurnal, 1960, Vol. 26, No. 1, pp. 110-112

TEXT: As the presence of iron disturbs the precipitation of titanium done by means of copperon, it was suggested to mask it by Trilon B (Ref. 1). The present study attempts to check the effect of pH, the order of mixing of solutions, etc. on titanium precipitation by means of copperon. It was found that a complete separation of iron from titanium was impossible. At all pH and Ti : Trilon B ratios, part of the titanium remains in solution while the precipitate is contaminated by coprecipitated iron. There are 3 tables and 7 references: 1 Soviet, 2 US, 1 British, 1 Czechoslovakian, and 2 German.

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Study of the Conditions for Titanium
Precipitation in the Presence of Trilon B

S/073/60/026/001/016/021 ✓
B004/B054

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN USSR
(Institute of Powder Metallurgy and Special Alloys of the
AS UkrSSR)

SUBMITTED: October 30, 1958

Card 2/2

HAZARCHUK, T.N., kand.khim.nauk

Interinstitute seminar on the chemistry of refractory compounds.
Ukr. khim. zhur. 26 no.5:676-677 '60. (MIRA 13:11)
(Refractory materials)